*Table 4*

| *Author, date and country* | *Patient group* | *Study type* | *Outcomes* | *Key results* | *Study weaknesses* |
|---|---|---|---|---|---|
| Ginsberg JS, *et al*, 1998, Canada[1] | Over 18s clinically suspected PE, referred to TE consultant | Prospective cohort | Sensitivity and specificity<br>LRs | Whole group<br><br>SimpliRED:<br><br>sensitivity 84.8%<br><br>specificity 68.4%<br>LR+ 2.7<br>LR− 0.22<br>In Low PTP<br>Sens 79%<br>Spec 75%<br>LR− 0.27 | Follow up not same in all groups.<br><br>For subgroup analysis only LR−ve given, no sensitivity or specificity<br>No further identification of patient's presenting problem<br>No sample size calculation<br>No CIs given |
| De Groot M, *et al*, 1999, Netherlands[2] | In patients and outpatients suspected of PE | Prospective management study | False –ve D-dimer results | 10% of normal SimpliRED results had PE that is, 90% sensitivity | Incorporation bias<br>RS not universally applied<br>No sample size calculation<br>No CIs given |
| Farrell S, *et al*, 2000, USA[3] | Consecutive patients referred from ED for ?DVT and PE | Prospective clinical trial | Sensitivity<br>PVs<br>LRs | PE +ve 32.8%<br>Sens 68%<br>95% CI 54, 83%<br>Spec<br>NPV 83%<br>95% CI 75, 91%<br>LR−ve 0.42<br>95% CI 0.26, −0.66 | RS not applied to all patients<br>Wide CIs |
| Ginsberg JS, *et al*, 1995, Canada and Netherlands[4] | Patients referred to TE consultant, suspected of acute PE | Prospective cohort | Sensitivity and specificity<br>PVs | PE +ve 19%<br><br>Sens 94%<br>95% CI 70, 99%<br>Spec 66%<br>95% CI 53, 77%<br>NPV 98%<br>PPV 38% | RS not applied to all patients<br><br>Large CIs, therefore need verification in a more powerful study |

*Search strategy*

Medline 1966–07/00 using the OVID interface. [{(Exp pulmonary embolism or pulmonary embolism.mp) OR {(pulmonary.mp.) AND (exp embolism OR embolism$.mp.)} OR (exp thromboembolism or thromboembolic.mp.)] AND (Simplired$ OR exp fibrin fibrinogen degredation products or d-dimer$.mp)].

*Search outcome*

Altogether 172 papers were found of which 162 were irrelevant and six of insufficient quality for inclusion. The remaining four papers are shown in table 4.

*Comments*

The "gold standard" investigation for the diagnosis of PE is pulmonary angiography. However, the universal application of this investigation in all patients, in any clinical trial for the investigation of PE, is unethical; the morbidity and mortality associated with this investigation are unacceptably high. Therefore most research is conducted using decision making analysis tools; this would be acceptable if all study patients are subject to the same diagnostic tests. If this does not happen, the validity of the results can be questioned. In the above trials, where the confidence intervals are given, the width of the interval is large; this could be remedied with a larger more powerful trial. As they stand, the confidence intervals are too wide.

*Clinical bottom line*

SimpliRed does not have the required sensitivity to be used to rule out PE in an ED setting.


1 Ginsberg JS, Wells RS, Brill-Edwards P, *et al*. Sensitivity and specificity of a rapid whole-blood assay for d-dimer in the diagnosis of pulmonary embolism. *Ann Intern Med* 1998;**129**:1006–11.
2 De Groot M, van Marwijk Kooy M, *et al*. The use of a rapid d-dimer blood test in the diagnostic work-up for pulmonary embolism: a management study. *Thromb Haemost* 1999;**82**: 1588–92.
3 Farrell S, Hayes T, Shaw M. A negative SimpliRED d-dimer assay result does not exclude the diagnosis of deep vein thrombosis or pulmonary embolus in emergency department patients. *Ann Emerg Med* 2000;**35**:121–5.
4 Ginsberg JS, Wells RS, Brill-Edwards P, *et al*. Application of a novel and rapid whole blood assay for d-dimer in patients with clinically suspected pulmonary embolism. *Thromb Haemost* 1995; **73**:35–8.


## Elastic compression stockings and the risk of post-thrombotic syndrome in patients with symptomatic proximal vein thrombosis


Report by Beverley Lane, *Research Nurse*
Search checked by Steve Jones, *Research Fellow*


*Clinical scenario*

A 35 year old woman attends the emergency department with a swollen and painful left leg. A DVT is suspected and confirmed on ultrasound. You are aware of the possible risks of developing post-thrombotic syndrome and

*Table 5*

| *Author, date and country* | *Patient group* | *Study level* | *Outcomes* | *Key results* | *Study weaknesses* |
|---|---|---|---|---|---|
| Brandjes D, *et al*, 1997, Holland[1] | 194 consecutive patients with a first episode of proximal DVT (proved on venogram). | PRCT | Incidence of PTS | Mild to moderate PTS occurred in 19 patients in the stocking group and in 46 patients in the control group ($p \leq 0.001$) | Due to the non blinded design, potential bias in the assessment of post-thrombotic syndrome |
| | Custom fitted graduated compression stockings (96), *v* no stockings (98). Assessment every 3 months for 2 years, and thereafter every 6 months for at least 5 years. | | PTS was assessed using clinical characteristics and leg measurements | 11 patients in the stocking group developed severe PTS compared with 23 in the control group ($p \leq 0.001$) | Lack of an accepted definition of PTS |

wonder whether this young woman would benefit from the use of compression stockings.

*Three part question*
In [patients with confirmed deep vein thrombosis] does [the use of compression stockings] reduce [the risk of post-thrombotic syndrome]?

*Search strategy*
Medline 1966–07/00 using the OVID interface. {(Exp.thrombosis OR venous thrombosis OR thrombosis.mp) AND (exp.stockings.mp) OR TED stockings.mp OR support stockings.mp OR exp. compression stockings.mp OR graduated compression stockings.mp). LIMIT to english language AND human.

*Search outcome*
Altogether 19 papers were found of which 18 were irrelevant or of insufficient quality for inclusion. The remaining paper is shown in table 5.

*Comments*
The incidence of PTS following confirmed DVT is unknown but it has been reported to be between 20% and 100%. This wide range probably reflects the small size of these retrospective studies with different periods of follow up and selection criteria. Interpretation of the findings from these studies is also hampered by the lack of objective diagnostic criteria for PTS.

*Clinical bottom line*
Elastic compression stockings should be used within two weeks of onset of acute thrombotic event and worn for up to two years.

1 Brandjes D, Buller H, Heijboer ??,*et al*. Randomised trial of effect of compression stockings in patients with symptomatic proximal vein thrombosis. *Lancet* 1997;**349**:759–62.

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**Prior injection of local anaesthetic and the pain and success of intravenous cannulation**

Report by Ross Murphy, *Specialist Registrar*
Search checked by Simon Carley, *Specialist Registrar*

*Clinical scenario*
A 45 year old woman attends the emergency department with cellulitis. You decide to admit her for intravenous antibiotics. She becomes agitated, distressed and tearful when you explain this to her. On questioning she reveals that she is afraid of the pain of intravenous cannulation. You wonder whether a prior injection of local anaesthetic would lessen the pain of cannulation without affecting your chances of success.

*Three part question*
In [a patient requiring intravenous cannulation] will [a prior injection of local anaesthetic] reduce [the pain of cannulation without effecting the chance of successful cannulation]?

*Search strategy*
Medline 1966–07/00 using the OVID interface. [Venflon.mp OR cannula.mp or exp catheterization, peripheral OR exp infusions, intravenous OR exp injections, intravenous] AND [local anaesthetics.mp OR exp anaesthetics, local OR exp bupivicaine OR exp lidocaine OR exp procaine OR exp tetracaine] AND [pain.mp OR exp pain]. LIMIT to human and english language AND abstracts.

*Search outcome*
Altogether 251 papers were found of which 241 were irrelevant or of insufficient quality for inclusion. The remaining 10 papers are shown in table 6.

*Comments*
These studies do indicate that a prior injection of local anaesthetic lessens the pain of intravenous cannulation without affecting the chances of successful cannulation. However, none of the trials were fully blinded and most were not properly single blinded. One used a placebo control and only one reported side effects. While the results were statistically significant it is not known if they were clinically significant and few of the trials commented on the increased length of time it takes to administer anaesthetic or the cost to the health service. Although different anaesthetics were used in different studies most concen-